

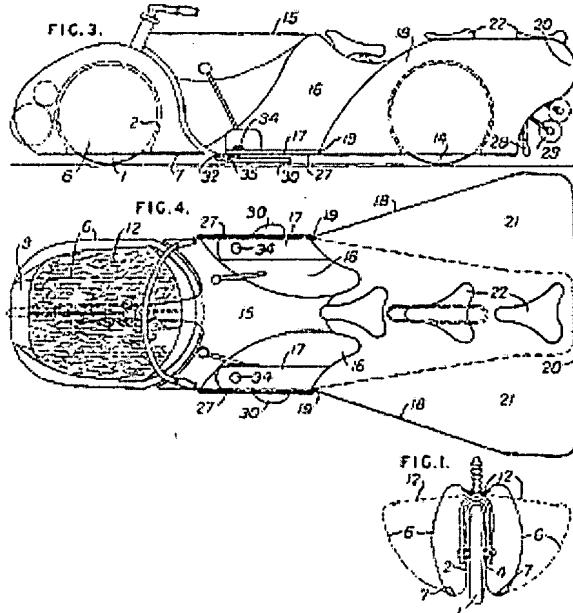
# Improvements in motor cycles adapted for use as water cycles

Publication number: GB449860  
Publication date: 1936-07-06  
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Classification:  
- International: B60F3/00; B60F3/00;  
- European: B60F3/00D4  
Application number: GB19360000370 19360104  
Priority number(s): GB19360000370 19360104

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## Abstract of GB449860

449,860. Motor-cycles adapted for use as water-cycles. CANEGHEM, A. E. F. VAN, 14, Klein - Hehlener Strasse, Celle, Hanover, Germany. Jan. 4, 1936, No. 370. [Classes 136 (i) and 136 (iii)] A motor-cycle adapted to be used as a water-cycle is provided with a covering or casing which, when the machine is used on land, acts as a mudguard, but serves as a float or hull on water. The casing enclosing the front wheel forms a separate unit adapted to turn with the wheel for steering on water. A hollow casing 2, Figs. 1 and 3, for the front wheel 1 is provided with stuffing-boxes 4 for the passage of the hub, and comprises side walls 6 adapted to swing outwards about hinges 7 to form floats, the front and back and the top being closed by collapsible covers 9, 12, respectively. The rear part of the cycle including the wheel 14 is similarly enclosed, side walls 18, Figs. 3 and 4, being adapted to swing outwards about hinges 19, carrying with them a collapsible rear wall 20. The covering then forms pockets 21 for luggage or passengers, and may also support passenger seats 22. The covering may be spread outwards by telescopic or rack-and-pinion mechanism, either manually or automatically by means of a float 29, which may also control gearing driving a propeller 28 from the motor. An intermediate cover 15 is recessed at 16 for the driver's legs, which are protected by folding side aprons 27 fitted adjacent to footrests 17. The motor cycle is supported when stationary &c. by side props 30 having ground-engaging parts or rollers, each prop being pivoted at 35 and adapted to be depressed by a pedal 34 and raised by a spring 32. The front wheel and casing when used as a rudder are turned through a



frictional device or reduction gearing. A small wheel at the front, driven by the main wheel, facilitates climbing up a bank when leaving the water. The motor may be additionally cooled on water by means of a fan or compressed air, or by the passage thereto of water from the river &c. on which the machine is travelling.

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# PATENT SPECIFICATION



Application Date: Jan. 4, 1936. No. 370/36.

**449,860**

Complete Specification Accepted: July 6, 1936.

## COMPLETE SPECIFICATION

### Improvements in Motor Cycles adapted for use as Water Cycles

I, ACHILLES EDUARD FREIHERR VAN CANEGHEM, of 14, Klein-Hehlener Strasse, Celle (Hanover), Germany, of no nationality, do hereby declare the 5 nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to a motor cycle 10 which can be used as a water cycle, and consists in providing an ordinary motor cycle with a casing which does not impede the running of the cycle on land and serves when on land merely as a mud- 15 guard, while acting as a boat body or float when travelling in water.

In particular the invention is embodied in such a manner that the front wheel and its covering on the one hand, and the 20 frame engine, back wheel and covering on the other, form independent units, so that, when running on land, the front wheel can be steered in the usual manner, whereas when in water the front wheel 25 and covering in combination with the covering of the rear part of the cycle form a boat body or float. With this object the covering of the front wheel is designed to fit over the wheel like a 30 trough, the opening at the top of the trough being fitted with a cover for protection against dust and rain. For use on land the side portions of the trough close inwardly and the cover folds up concer- 35 tina-fashion, while when on water the cover extends—similar to the deck of a boat—over the two portions of the trough which in such case are extended out laterally. This collapsible form of 40 front wheel covering is desirable in order that, when on land, the front wheel shall not take up much more room in the lateral direction than in the case of an ordinary motor cycle. In conse- 45 quence of the collapsible form of the front wheel covering the walls at the front and rear of the wheel must be pro- 50 vided with waterproof flaps drawn tight, so that the fixed parts of the coverings are connected with the two movable por- 55 tions of the trough by means of water- 60 proof material, such as rubber or proofed canvas.

Near the engine the rear covering of the motor cycle is recessed to accommodate the legs of the rider from the saddle down to the foot rests, while in the vicinity of the back or driving wheel the covering gradually tapers to an advantageously arched end. Portions of this rear covering, however, are adapted to swing out laterally, and for the purpose they are hinged to the foot rests near the saddle on the one hand, while on the other hand their rear parts are mounted so that they can be extended transversely by a suitable spreader. The spreader may consist of a telescopic cross bar, or rack mechanism or other suitable actuating means, operated advantageously by a handle mounted near the usual motor control lever. The middle part of the rear covering in the region of the back or driving wheel is built, as in the case of the front wheel covering, so as to enclose the wheel after the manner of a shell. In this way, a simple and reliable water-tight enclosure can be formed, since the hubs of both wheels enter the interior of the covering only through two stuffing boxes in each case. Pillion seats can be provided on the rear covering so that either the passenger's legs hang down freely outside the covering in the usual way, or, if the covering is extended a little on both sides, they can be accommodated or supported inside the covering. Moreover, when on land both the front and rear coverings can be opened out to any extent as when travelling in water, so that the double trough of the front wheel sheathing can be used as a carrier for convenient loads, and the side pockets or receptacles of the rear covering can be used for holding goods or holding pillion seats. When the machine is used on the water the coverings are opened out in accordance with the load, it being advisable for the passengers to take their places in the side pockets, in order to lower the centre of gravity. 90 95 100

To protect the cyclist, as well as the passengers, from getting wet when on the water, it is advantageous to provide coverings on both sides of the nature of Venetian blinds, these coverings being 105

extended only for travelling on water. These coverings may be placed beside or under the footrests (running boards) when on land.

5 When the machine is used as a water cycle the steering is effected by means of the front wheel or its covering, it being advisable to provide the steering stem with a brake or reduction gear, so that 10 the front wheel can move only through a small angle or move only slowly. This precaution renders it impossible for the rudder (front wheel) to be turned too suddenly, so as to endanger the vehicle, 15 when moving rapidly over water. Moreover, when on the water an effect is produced, not only by the lateral deviation of the front wheel, but also by the inequality in the flow of the water—due 20 to the different surfaces exposed to the impact of the water—when the front wheel is set obliquely in relation to the watertight covering for the engine and back wheel.

25 When used as a water cycle the machine is advantageously driven by means of a propeller, which may either be permanently secured to the frame, or attachable thereto. In the former case 30 it is advisable to design the rear covering with an overhang or with a pocket or recess. The propeller is driven by the engine, through suitable transmission gearing. The change from back- 35 wheel drive to propeller drive is advantageously effected merely by means of a shift lever, with transmission links, the lever being located near the ordinary motor cycle gear-change lever. The 40 change may also be effected automatically by means of a float, which may be mounted on any convenient part of the covering advantageously below the overhang at the end of the rear covering, (so 45 that it can serve as a bumper when on land), the float hanging down when on land but being raised by its buoyancy on entering the water, and thereby changing over the drive, either by direct 50 mechanical action or indirectly through a relay. The float may also be employed to effect all other changes required in adapting the machine for use on land and water respectively. These 55 changes include, for example, the cooling of the engine by an auxiliary device, because, whether air-cooled or water-cooled, the engine of necessity becomes overheated during a long trip 60 on the water.

Another important feature is the provision of supporting members for use when the machine is running at low speed, or is standing still. It is a known 65 highly inconvenient circumstance with

motor cycles that the driver must support the machine with both feet when starting and standing still. Since the weight to be supported is by no means inconsiderable, the soles of the driver's shoes are exposed to heavy wear and, on the other hand, his life is always in danger, either by his own machine (which can easily fall over) or by other vehicles on the road, which might easily run over his spread legs or feet. The invention avoids this disadvantage in a simple manner by providing, under the boards constituting the foot rests, pivotally mounted ground-engaging or brake blocks, which are depressed by pedals actuated by the driver when the need arises. It is important that the supporting and brake blocks should be adapted to be operated independently. The pedals act against the force of springs which tend to press the blocks always upwards close under the foot rests, the blocks being therefore always in the raised position when not in use. The pressure exerted by the supporting and brake blocks can be varied at will by selecting the ratio between the throw of the blocks and the point of application of the pedals. The blocks may also be used as a stand when the machine is standing still. They may also be fitted with rollers, in which case they merely form supports or lever arms. It is also advisable to mount the blocks in such a manner that they swing out laterally when depressed, so as to form a wider supporting base corresponding to that hitherto afforded by the legs. It will be understood that the blocks are no hindrance when the machine is in the water.

For changing over from water to land use and to ensure the running of the machine—especially when the banks of the shore are very steep—it is advisable to fit the front portion of the covering with a leading wheel which enables the machine to climb the banks in the same manner as a caterpillar tank. This additional wheel can be driven by the front wheel. In such case a direction-rectifier wheel must be provided between the leading wheel and the front wheel, and be adapted advantageously to be put in and out of engagement in order to avoid the necessity for keeping the leading wheel running when not in use.

When the machine is used on the water, the auxiliary cooling of the engine can be effected by means of a fan which is actuated only when travelling on water. A compressor, blowing cold air against the engine fins, may also be provided. An auxiliary fan may also

be provided, where water-cooling is employed, or the covering is so provided that the radiator passes right through the cold river water or the like, which 5 then replaces the ordinary cooling flow of air. Moreover the cooling water may be continuously replaced by, or mixed with, the river or like water, it being also advisable to provide regulating 10 members controlled in accordance with the rise in engine temperature.

The invention is diagrammatically illustrated by way of example in the accompanying drawings.

15 Figure 1 is a cross section of the covering of the front wheel, with the front wheel shown in elevation.

Figure 2 is a front elevation of the motor cycle, shewing the trough-shaped 20 front wheel covering partly closed and partly open.

Figure 3 is a side elevation of the motor cycle with the coverings.

25 Figure 4 is a plan corresponding to Figure 3, with the coverings in the closed and opened positions.

Figure 5 shows the supporting and brake blocks, with the pedals.

30 Figure 6 is a plan of the gear mechanism of the rear covering for the motor cycle.

Figure 7 is a side elevation of the mechanism according to Figure 6.

Referring to the drawings, a covering 35 2 is slipped, like a shell, over the front wheel 1 of the motor cycle (Figures 1 and 2), the hub 3 passing through stuffing boxes 4 in the covering 2. The front wheel steering column 5 may be 40 of the usual construction. Attached to the covering 2 on both sides of the wheel 1 are walls 6, mounted on the lower ends of the covering 2 by means of hinges or the like 7. The inner walls 2 and the 45 outer walls 6 together form a watertight trough. Sealing means 8 may be provided around the hinges 7. In order to prevent access of water to the cavity (trough) when the walls 6 are extended 50 outwardly, the walls 6 are connected, by means of watertight material 9, to the front and rear coverings 10, which are secured to the front part 5 of the frame. The walls 6 advantageously engage 55 round the front and rear walls 10 by means of pads 11. When the trough 2, 6 is closed the watertight material or the like 9 collapses, concertina-fashion. The upper opening of the trough 2, 6 60 can be closed in similar manner by a cover 12, so that a boat hull or float is formed around the front wheel when the machine is used as a water cycle. In such case, there is no objection to the 65 two troughs being opened beyond the

limit of width determined by the handle bars 13.

The rear portion of the motor cycle is completely encased in a similar manner, but so that both the engine and the back-wheel are protected against the access of water. The covering fits around the back wheel 14 like a shell, similar to that shewn in Figure 1. The rear covering 15 is recessed at 16 on both sides, to receive the driver's legs, as shown in Figures 3 and 4.

70 Since the width of the motor cycle is fixed by the two foot-rests 17, the rear portion of the covering can be attached to the said foot-rests and the two sides thereof preferably converge to come together behind the wheel 14. When open the portions 18 of the rear covering are adapted to be extended outwardly to any convenient extent, and for the purpose are attached to the front part of the covering 15 by means of hinges 19. In the extended position the portions 18 form, with their rear walls 20, two side pockets or two seats 21. The passengers may take their place either on the pillion seats 22 or in the pockets 21, the latter being preferable when on the water.

90 The portions 18 of the covering can be extended and drawn together by means of any convenient actuating system, an example of which is represented by the rack mechanism shown in Figures 6 and 100 7. A rack 23 engages with an element 18<sup>1</sup> of one of the portions 18 of the covering, and a second rack 24 engages with the element 18<sup>1</sup> of the other portion 18 of the covering. Between the two racks 105 23 and 24 is a pinion 25, rotatably mounted in a fixed position and actuated—advantageously through transmission mechanism—by a lever 26. In the collapsed position of the seats 21 the rear 110 wall 20 folds up like a Venetian blind, as shown in Figure 4.

115 A folding apron 27 is provided beside or below the foot rests 17, to protect the driver from the water, and also to increase the displacement of the machine when used on the water.

When the machine is used as a water cycle it is driven by a propeller 28 driven by the engine. The change-over is 120 advantageously effected by means of a change gear, and the operation can be effected automatically by means of a float 29, which rises when the machine enters the water, and thereby directly, or 125 indirectly, changes the drive. On land the float 29 may serve as a bumper and when in the water may also be employed as a control device in connection with the other necessary changes, such as extend- 130

ing the coverings, in order to increase displacement, starting the fan, and the like.

According to Figure 5 rests provided 5 as ground-engaging blocks 30 are located beside or below the foot rests 17. The blocks 30 are pivotally mounted in brackets 31 attached to the foot rests 17. By means of a spring 32, which engages 10 a lever arm 33 forming an extension of the block 30, the latter is kept pressed upwards, and therefore pushed in the direction of the foot rests 17. For the purpose of bringing the block 30 into 15 action, a pedal 34 is mounted on or in the foot rest 17 and, on being depressed, positively forces the block 30 downward. Since the leverage ratio between the block block pivot 35, the bearing surface 20 36 of the block, and the point of application 37 of the pedal may be selected as convenient, the pressing forces of the pedal, the time occupied in depressing, and the distance traversed by the block 25 per unit of time when depressed can be varied as desired.

To prevent the front wheel being turned too suddenly when acting as rudder of the water cycle, it is advisable 30 to connect the steering column 5 to the frame of the motor cycle through reduction gearing, in such manner that the steering is direct when the machine is on land, and through the reduction gearing 35 when on the water.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim

40 is:—

1. A motor cycle which can also be used as a water cycle, characterised in that an ordinary motor cycle is provided, without impairing its running properties 45 on land, with a covering in such manner that, when the machine is used on land the covering acts solely as a mudguard, but serves as a boat hull or float when on the water.

50 2. A vehicle according to claim 1, characterised in that on the one hand the front wheel and covering, and on the other the frame, together with the engine and back wheel with its covering, form 55 separate units, so that when on land the front wheel can be steered in the usual way, but that when used on the water the front wheel with its covering in conjunction with the covering of the rear part 60 of the cycle forms a boat-hull or float unit.

3. A vehicle according to claim 1 or claim 2, characterised in that the front wheel covering is designed as a trough 65 fitting around the wheel, the trough

being open at the top and adapted to be closed by a cover as a protection from dust, rain and water, the outer walls of the trough being adapted to swing out laterally.

4. A vehicle according to any one of the preceding claims, characterised in that the rear covering of the machine is recessed, in the vicinity of the engine, from the saddle to the foot rests, in accordance with the position of the driver's legs, whereas close to the back wheel the sheathing tapers gradually to an advantageously rounded end, the rear covering being adapted to open out laterally by hinging of the rear covering walls to the foot rests near the driver's saddle, whilst their rear parts are extensibly mounted over a suitable spreader device.

5. A vehicle according to claim 4, characterised in that the spreader device comprises a telescopic transverse control, or a rack driving mechanism, or any other suitable driving gear.

6. A vehicle according to any one of the preceding claims, characterised in that folding aprons are provided on both sides of the foot rests and serve as additional coverings when the machine is used on the water.

7. A vehicle according to any one of the preceding claims, characterised in that when the motor cycle is being used on the water the steering is effected by means of the front wheel, or its covering, a braking device, or a reduction gear, being advantageously provided between the steering column and the frame.

8. A vehicle according to any one of the preceding claims, characterised in that when used as a water cycle the machine is driven advantageously by a propeller, which may either be permanently mounted on the frame, or may be detachable, and is driven by the engine through suitable transmission driving gear.

9. A vehicle according to any one of the preceding claims, characterised in that a float is mounted at any convenient position on the covering, the float being down when the motor cycle is on land, but being raised through its buoyancy on the machine entering the water, and thereby changing the drive and effecting other changing operations, either by direct mechanical action or indirectly through relays.

10. A vehicle according to any one of the preceding claims, characterised in that pivotally mounted supporting or brake blocks, having ground-engaging surfaces or supporting rollers, are provided beside or below the lateral foot

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rests and are adapted to be depressed by pedals worked by the feet of the driver.

11. A vehicle according to claim 10, characterised in that the blocks can be 5 actuated independently of one another.

12. A vehicle according to any one of the preceding claims, characterised in that a leading wheel adapted to be driven as an auxiliary by the front wheel is provided in the front portion of the covering.

13. A vehicle according to any one of the preceding claims, characterised by additional means for cooling the engine when on the water, for example, such as 15 a fan which comes into action or is speeded up only when the machine is on the water, or a compressor which blows

cold air against the fins of the engine.

14. A vehicle according to claim 13, characterised in that in the case of a 20 water-cooled engine the covering is so designed that the radiator passes completely through the surrounding water, or that the cooling water itself is renewed by, or mixed with, the water upon which 25 the vehicle floats, regulating devices being advantageously provided, which are controlled in accordance with the rising engine temperature.

Dated this 4th day of January, 1936.

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Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1936.

*/This Drawing is a reproduction of the Original on a reduced scale./*

Fig. 1.

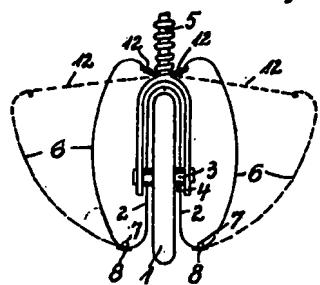


Fig. 2.

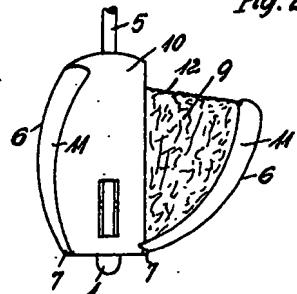


Fig. 3.

